

Appln. Serial No. 10/706,656
Amendment Dated September 14, 2006
Reply to Office Action Mailed June 14, 2006

REMARKS

In the Office Action dated June 14, 2006, claim 2 was objected to; claims 1-5, 13-16, and 22-24 were rejected under 35 U.S.C. § 102 over U.S. Patent Application Publication No. 2003/0093407 (Cochrane); claims 6-12, 17-21, and 25-28 were rejected under 35 U.S.C. § 103 over Cochrane in view of U.S. Patent No. 7,035,843 (Bellamkonda).

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CLAIM OBJECTION

Claim 2 was objected to because “first grouping set” should be changed to “first result set.” Applicant respectfully disagrees, as “first grouping set” in line 1 of claim 2 refers to the “first grouping set” introduced near the end of line 3 of claim 1.

REJECTIONS UNDER 35 U.S.C. §§ 102 & 103

Independent claim 1 was rejected as being anticipated by Cochrane. Specifically, with respect to the controller element of claim 1, the Office Action cited ¶¶ [0035] and [0038] of Cochrane as disclosing the two update tasks performed by the controller in claim 1. Applicant respectfully disagrees.

Paragraph [0038] of Cochrane refers to materialized views based on a group-by clause expression specifying CUBE() ROLLUP(), and GROUPING SETS(). Paragraph [0035] of Cochrane indicates that maintenance of materialized views is incremental in nature to avoid full recomputation of the queries of the materialized views. The same paragraph mentions that a self-maintainable materialized view can be maintained incrementally by processing only the set of updated rows without reference to the underlying tables of the materialized view query.

The incremental update of a materialized view is explained more fully on pages 6 and 7 of Cochrane. On page 6, ¶ [0093] refers to a propagation phase in which a raw delta (representing a change) as a result of an insert/delete/update operation on the base table is computed. Paragraph [0094] of Cochrane then states that the raw delta stream is aggregated according to the grouping definition of the summary table (view). Significantly, the aggregated delta stream includes multiple, distinct grouping combinations. Cochrane, ¶ [0098]. This means that the delta stream is aggregated according to the grouping specification of the summary table (view). Cochrane, ¶ [0108].

It is of paramount importance for that patent application that this step results in a data stream *holding multiple grouping combinations* in the presence of a complex grouping expression of the summary table. For example, if the summary table is defined using ‘CUBE()’, then this aggregation step yields in a complete *delta cube* with ‘higher’ aggregate values for the original delta changes.

Id. (emphasis added).

Thus, the delta aggregation of Cochrane produces a “delta cube” according to the complex group-by expression of the view definition. Cochrane, ¶ [0110]. After aggregation, this delta cube “is paired with the current content of the summary table [view] using a left outer-join over the grouping and grouping function columns” Cochrane, ¶ [0114].

In other words, it is clear that what Cochrane contemplates is that after the changes to a base table have been identified (referred to as the delta), that delta is aggregated according to the

grouping sets specified in the complex group-by expression to produce a delta cube, such that a one-to-one correspondence between the content of the delta cube and the rows in the view to be updated exists. This type of incremental update of a view, as performed by Cochrane, is completely different from what is recited in claim 1, where the controller, in response to a change to the at least one base table, updates the first result set by computing a change to the first result set based on a change in the at least one base table. However, the second result set is updated by the controller by computing a change to the second result set based *on the change to the first result set*. In contrast, in Cochrane, updates of all entries of the view that are affected by a base table change are based on the change to the base table, by applying aggregation of the changes to the base table to produce a delta cube according to the grouping sets specified in the complex group-by expression. Clearly, updating the different portions of the view in Cochrane based on the delta cube does not constitute updating one result set based on a change in another result set (where both result sets correspond to respective grouping sets).

Therefore, it is respectfully submitted that claim 1 is clearly not anticipated by Cochrane.

Independent claims 13 and 22 are allowable for similar reasons.

In view of the allowability of base claims over Cochrane, it is respectfully submitted that the obviousness rejection of the dependent claims over Cochrane and Bellamkonda has also been overcome.

Allowance of all claims is therefore respectfully requested. The Commissioner is authorized to charge any additional fees and/or credit any overpayment to Deposit Account No. 14-0225 (11166).

Respectfully submitted,

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